

APOLLO PROGRAM DIRECTIVE NO. 38

TO : DISTRIBUTION

FROM:

*Samuel C. Phillips*  
SAMUEL C. PHILLIPS  
MAJOR GENERAL, USAF  
APOLLO PROGRAM DIRECTOR

SUBJECT: Color Coding/Marking of Piping System at the Manned Space  
Flight Centers and Contractor Operated NASA Facilities

OFFICE OF PRIME RESPONSIBILITY: MSF SAFETY DIRECTOR (MY)

I. PURPOSE

This Program Directive establishes the requirement for piping system identification and encompasses a standard MSF code for identification of materials conveyed in piping systems. The use of this code will promote greater safety and will decrease the risk of error, confusion or inaction in times of emergency by providing a uniform color code and written identification to warn personnel of the hazards associated with the materials involved.

II. SCOPE

This Directive is applicable to the Manned Space Flight Centers and those NASA facilities operated by contractors under the cognizance of the MSF Centers. This Directive is not applicable to pipe lines installed in flight vehicles nor piping systems buried in the earth, in floor slabs, or walls (partitions). However, such piping except in flight vehicles, must be identified at points of entry, exit and access. Piping in floor or ground trenches and above suspended ceilings shall be identified in accordance with the provisions of this Directive.

III. RESPONSIBILITY

The Directors of KSC, MSC, and MSFC are responsible for taking the necessary action to implement this directive.

IV. TIME COMPLIANCE

The contents of the directive are to be completed as quickly as practicable but not later than 90 days from the issue date of this Directive.

V. IMPLEMENTATION

- A. The Manned Space Flight Centers shall prepare their internal plans and directives as applicable to implement the responsibilities assigned herein and transmit copies to the Apollo Program Safety Director (Code MY).
- B. It is the intent of this Directive that each MSF Center shall as expeditiously as possible (1) Assess the piping systems at their respective Centers and facilities; (2) Determine what is required to bring their systems into compliance with this Directive; and (3) Carry out an active and timely program to insure positive identification of the material in the effected piping systems.

VI. GENERAL

- A. It has been determined that the three Manned Space Flight Centers all use one, or a combination of two, Military Standards in identifying pipe line products. Mil. Std. 101A is largely used by the Centers for permanent above ground installations, such as launch facilities and test structures. Mil. Std. 1247A is used by two of the Centers to mark pipe and tubing that is part of mobile equipment, such as test carts and trailers. The use of this standard is a carry over from the basic rocket engine marking system.
- B. In order to expedite the issuance and subsequent compliance with this Directive, the following instructions are given:
1. The primary specification for piping system identification in MSF installations shall be Mil. Std. 101A as revised August 13, 1961.
  2. For mobile equipment and special test and checkout equipment either Mil. Std. 101A or Mil. Std 1247A as revised August 17, 1964, may be used.
  3. Since Mil. Std. 101A does not specifically identify aerozene 50, which is a 50/50 mixture of UDMH and Hydrazine, the coding shall be as follows:

Primary color code - Brown  
Secondary color code - Yellow  
Printed identification - UDMH/Hydrazine  
Mixture

- C. Caution. Mil. Std. 101A identifies pipeline products by the hazard involved in their presence or use. It is possible, therefore, that a test site will be properly marked in accordance with Mil. Std. 101A and have identical color markings on both fuel and oxidizer lines. This points up the importance of having the pipelines completely marked including the name of the product.

VII. CENTER RESPONSIBILITIES

All MSF Centers are responsible for:

- A. Preparing an appropriate document which assigns the responsibility for functions and actions contained herein.
- B. Updating applicable Center directives/documents to agree with any future revisions of Mil. Std. 101A and 1247A.
- C. Assuring that piping identification is being accomplished without unnecessary overlap and duplication.
- D. Include in the Facilities Safety Survey Checklist (or equivalent document) a specific requirement for periodically conducting an inspection of the piping systems to ensure proper compliance with the applicable Center regulation.